

Smoke Impacts Summary – Northern CA Fires, August 19, 2012

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The statements below are those of the authors and do not represent official USFS announcements, views, or policy. They are meant as a research discussion of models and forecast data only.

Past and Current Conditions:

Monitoring data indicates the BlueSky predictions are generally capturing smoke effects from the fires. PM_{2.5} concentrations were low in Klamath Falls and Medford, and at Happy Camp and Yreka, SE of the Fort complex. The nephelometer at Lakeview, however, recorded heavy smoke concentrations. Monitors near the Chips fire continue to show high PM_{2.5} concentrations in the Feather River drainage (above 300 µg/m³), with moderate concentrations to the NE at Greenville (EBAM5). Model output this morning (Figure 1) continues to predict high smoke concentrations near all the large northern CA fires. The Ponderosa fire, which started yesterday afternoon west of the Reading Fire, is adding additional smoke to the area.

The visible satellite picture this morning (Figure 2) shows smoke lofting to the N-NE of the Fort Complex near the Oregon border, and also shows smoke in the drainages, especially visible near the Chips fire.

Model Output (Next 24 hours):

Today's BlueSky run is similar to yesterday's, with the forecast for smoke being carried to NE of the major northern CA fires again this afternoon (Figure 3). It's possible that BlueSky will underestimate PM_{2.5} concentrations, especially close to the fires, because the acreage for the new fires is significantly underestimated in the model runs. That said, the predicted moderate to high PM_{2.5} concentrations NE of the Fort complex are not expected to affect Medford, but could be affecting the I-5 corridor south of Medford. Klamath Falls is predicted to stay outside the smoke plume, but Lakeview is expected to experience moderate to high smoke concentrations today. The new Pass Fire, in Mendocino County, is predicted to send smoke into the Sacramento Valley, with low to moderate PM_{2.5} concentrations possibly affecting the I-5 corridor north of Willows.

The highest PM_{2.5} concentrations are predicted to remain fairly close to the fires in the morning. Klamath Falls is again forecast to have no significant smoke effects tomorrow morning (Figure 4), but moderate to high smoke effects are possible in and around Lakeview, OR. Drainage flow is again expected to dominate in the usual areas. There is no real change in the predicted mixing heights and ventilation rates, which are predicted to be good for smoke dispersion during the day (high mixing

heights) in the mid-to-late afternoon hours, but poor overnight into the early morning hours (low mixing heights and wind speeds). Consequently driving could be hazardous because of low visibility in late night and early morning hours, especially in drainages and valleys.

Figures 5 – 8 show forecast 24-hour forward trajectories every 6 hours for the next 24 hours for the Chips fire, and Barry Point and Fort complexes (ignore the “glitch” in the Google Maps trajectory in Fig. 8). Trajectories for the other fires can be roughly interpolated to give an idea of upper-level smoke transport for those fires. Release heights are 500, 1000, and 1500 meters above ground level (AGL). Trajectories for the next 24 hours show smoke aloft is predicted to be carried generally in the quadrant from N through NE of the fires. The profile views show that smoke aloft is not predicted to affect the surface, with the exception of the lowest trajectory from the Chips fire later this afternoon. Trajectories from the new Pass Fire (not shown) forecast smoke aloft will be advected to the east early this afternoon, then to the NE tonight and early morning tomorrow.

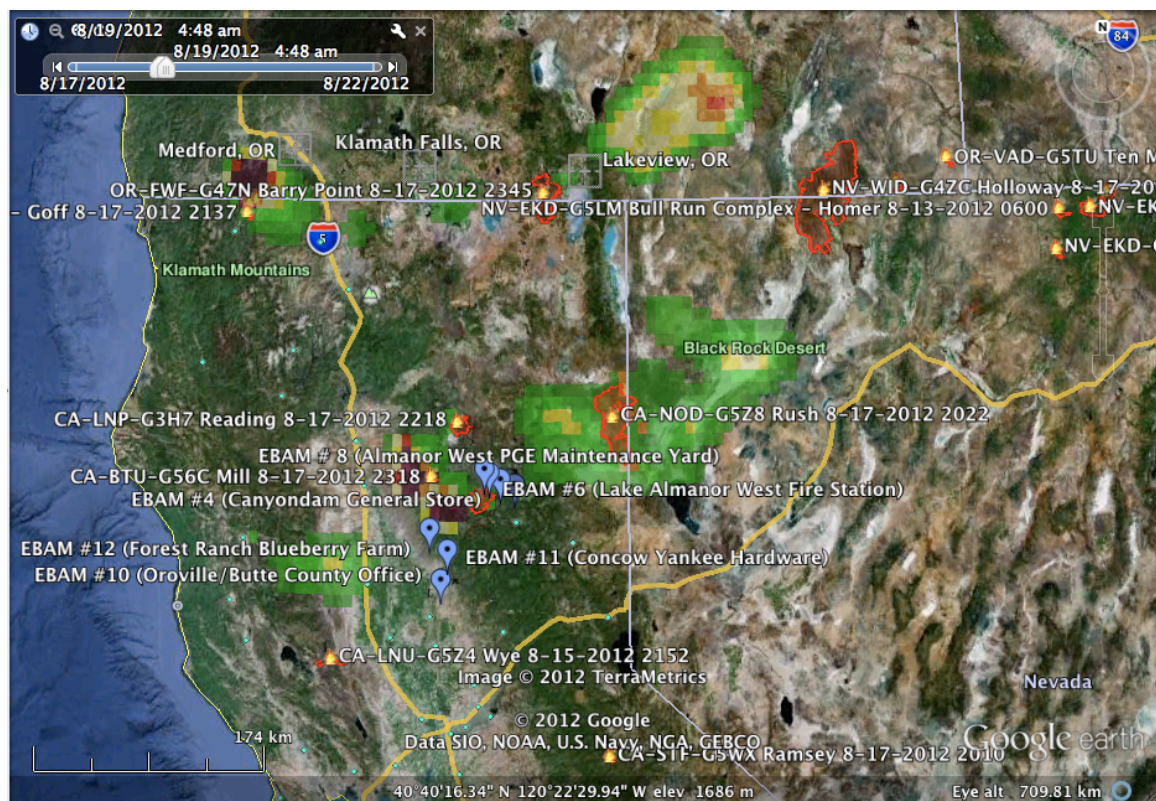


Figure 1. Predicted smoke effects from the northern CA fires at 5AM PDT, August 19. Greens indicate low concentrations, yellow and orange are moderate concentrations, and red and purple are high concentrations.

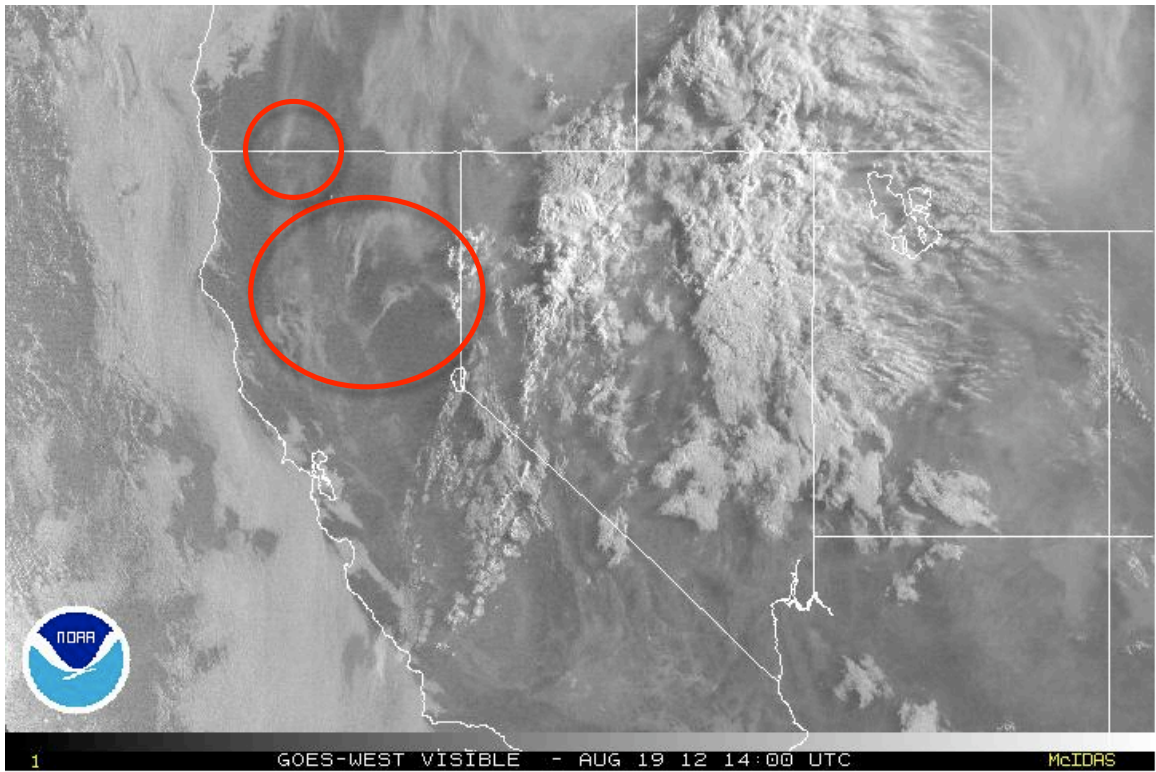


Figure 2. Visible satellite picture for 7:15AM PDT, August 19.

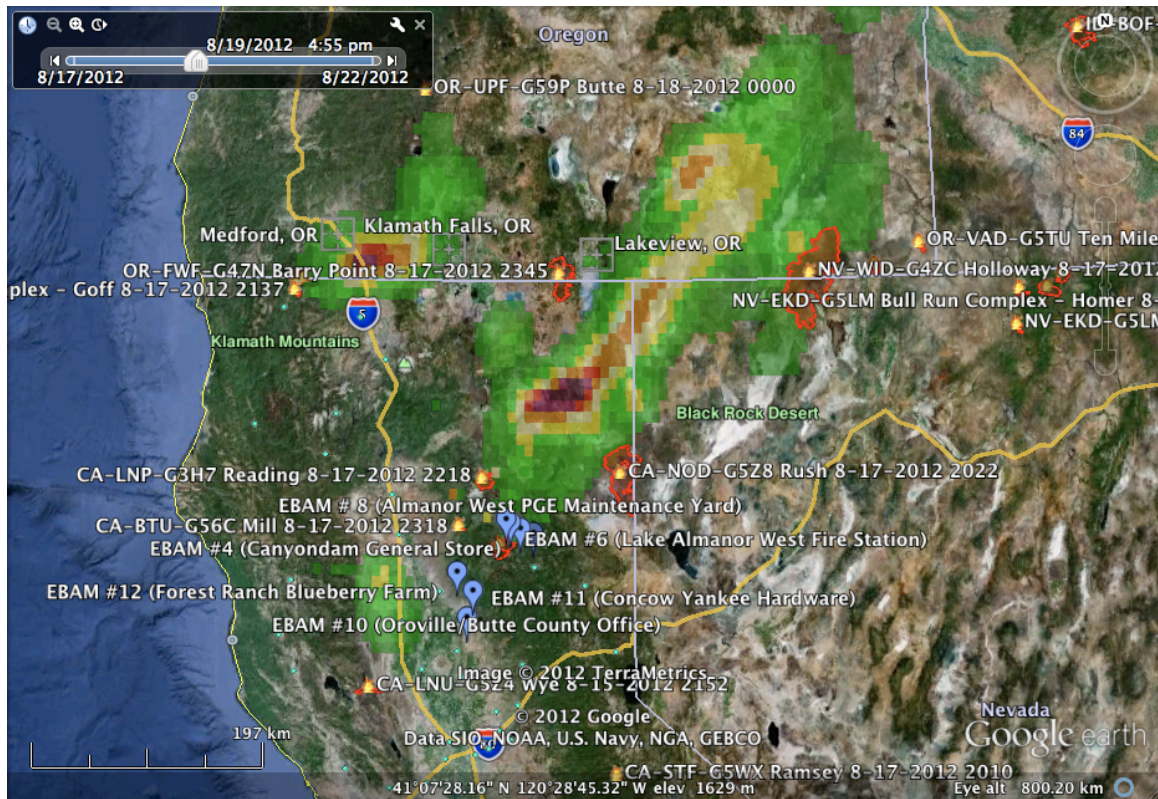


Figure 3. Predicted smoke effects from northern CA fires at 5PM PDT, August 19. Greens indicate low concentrations, yellow and orange are moderate concentrations, and red and purple are high concentrations.

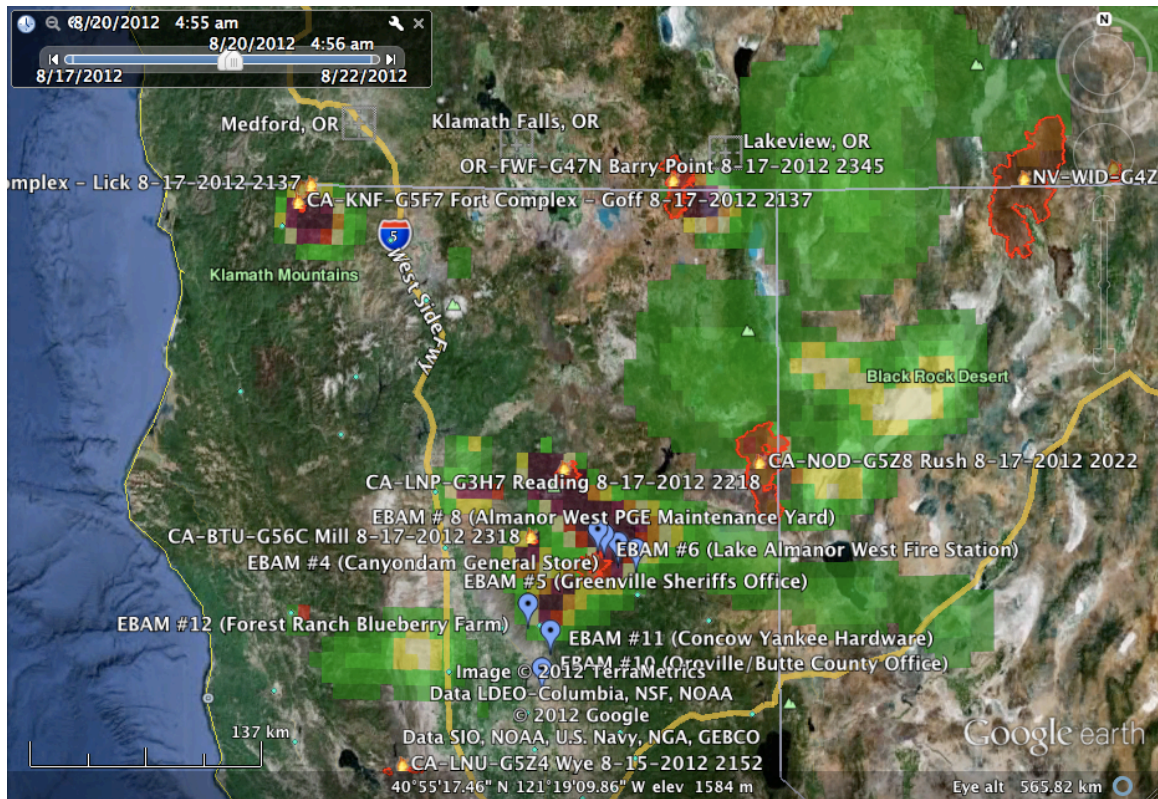


Figure 4. Predicted smoke effects from northern CA fires at 5AM PDT, August 20. Greens indicate low concentrations, yellow and orange are moderate concentrations, and red and purple are high concentrations.

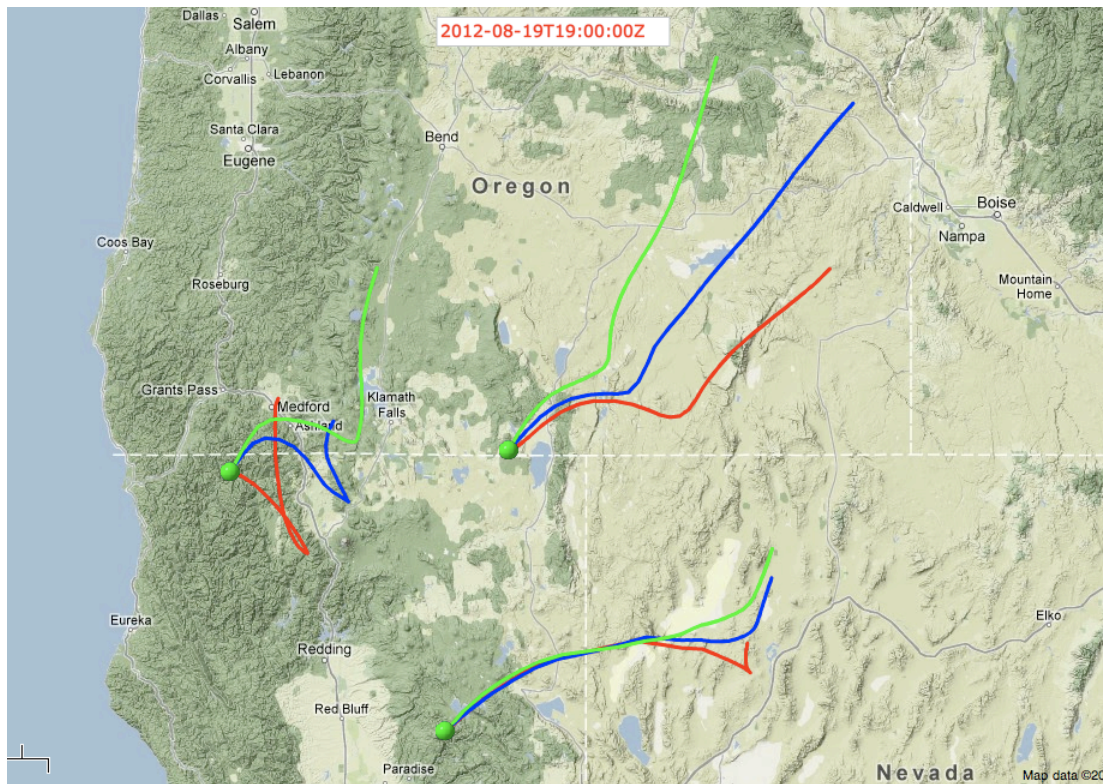
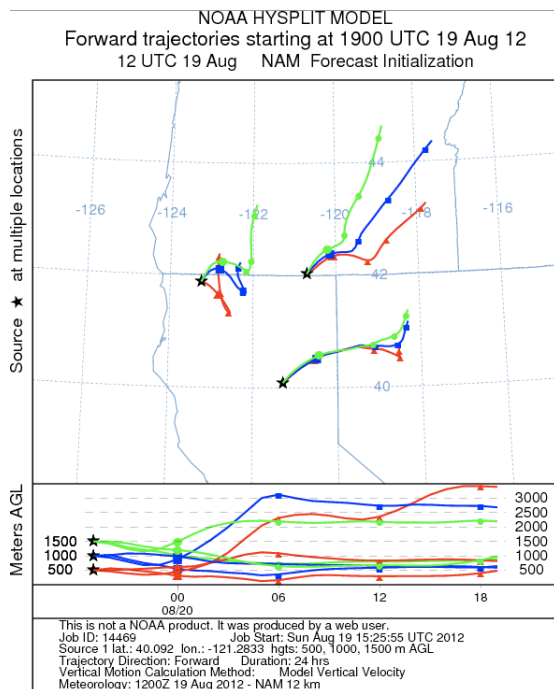


Figure 5. 24-hour forward trajectories for the Chips, Barry Point, and Fort fires, starting at 12:00 PM PDT, Aug 19, with release heights of 500 (red) 1000 (blue) and 1500 (green) meters AGL.

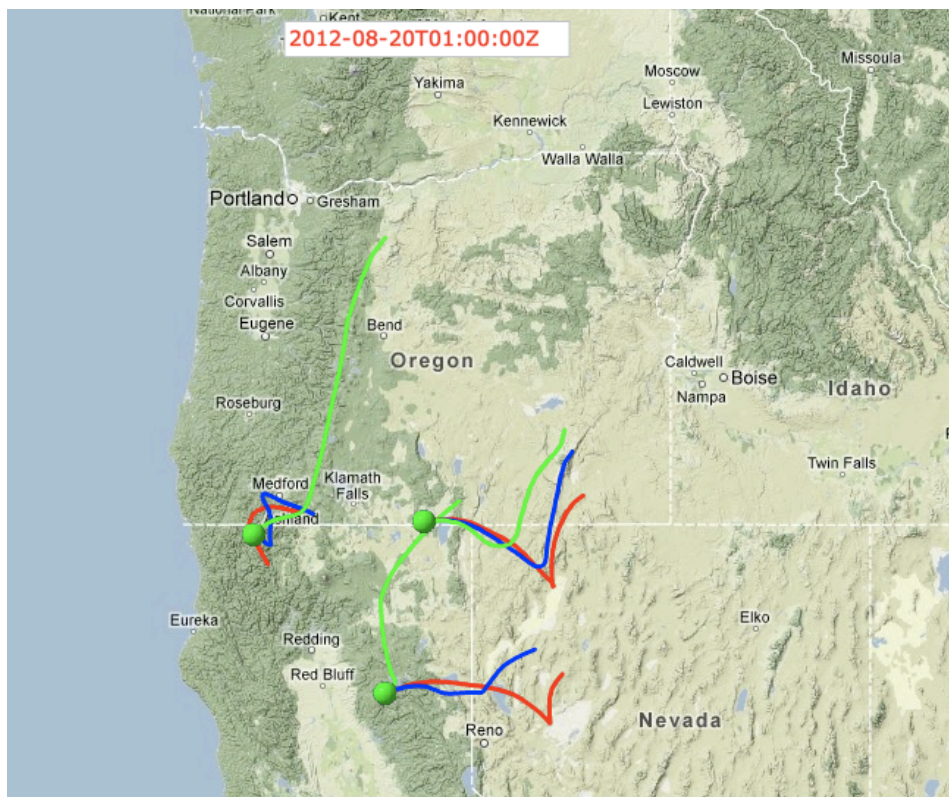
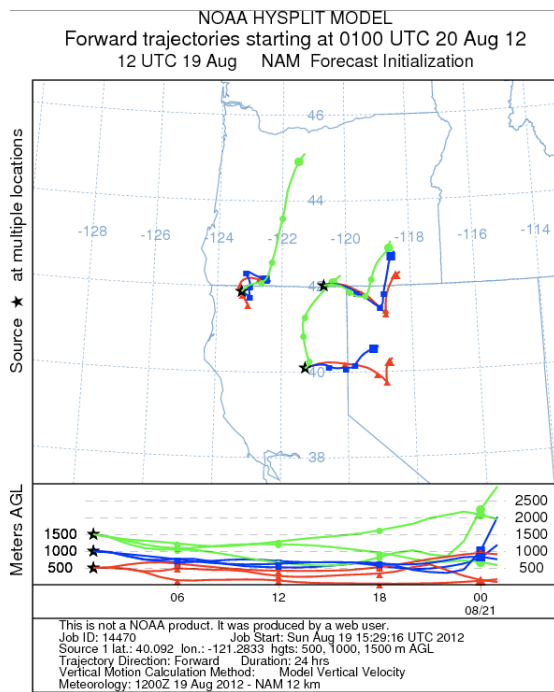


Figure 6. 24-hour forward trajectories for the Chips, Barry Point, and Fort fires, starting at 6:00 PM PDT, Aug 19, with release heights of 500 (red) 1000 (blue) and 1500 (green) meters AGL.

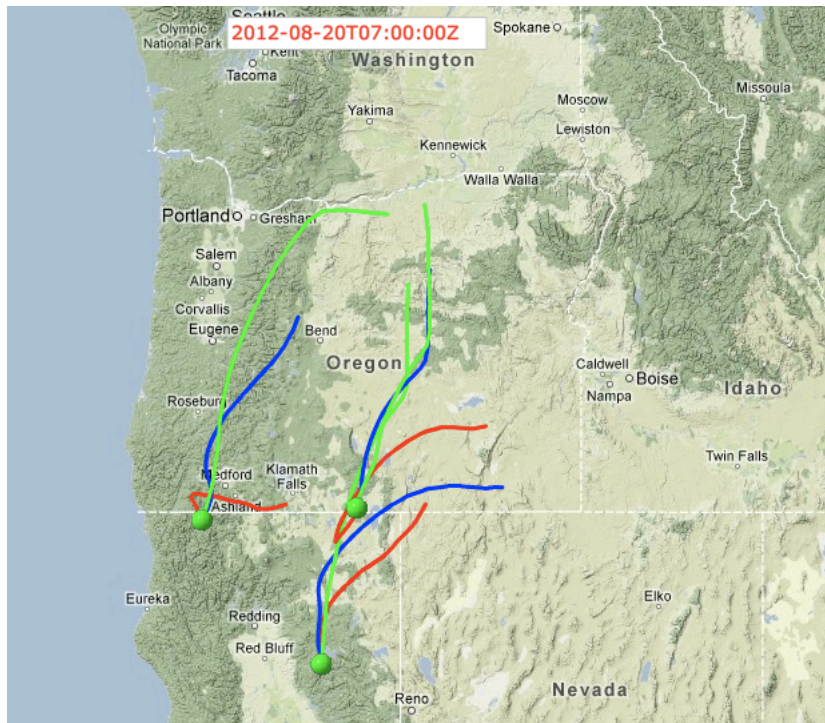
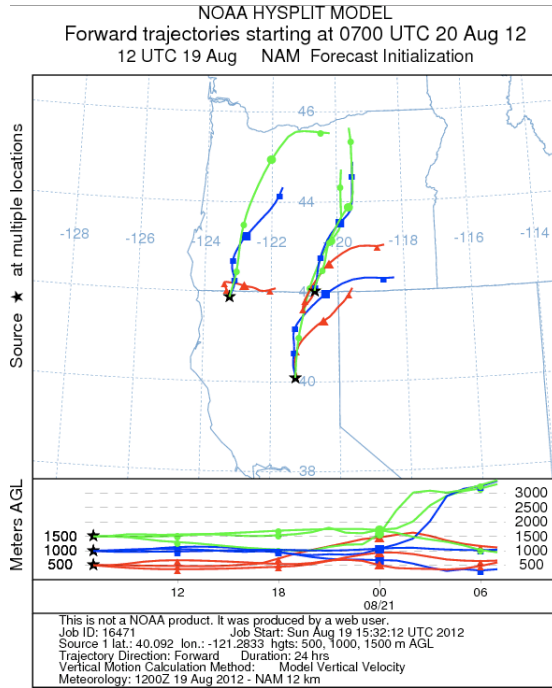


Figure 7. 24-hour forward trajectories for the Chips, Barry Point, and Fort fires, starting at 12:00 AM PDT, Aug 20, with release heights of 500 (red) 1000 (blue) and 1500 (green) meters AGL.

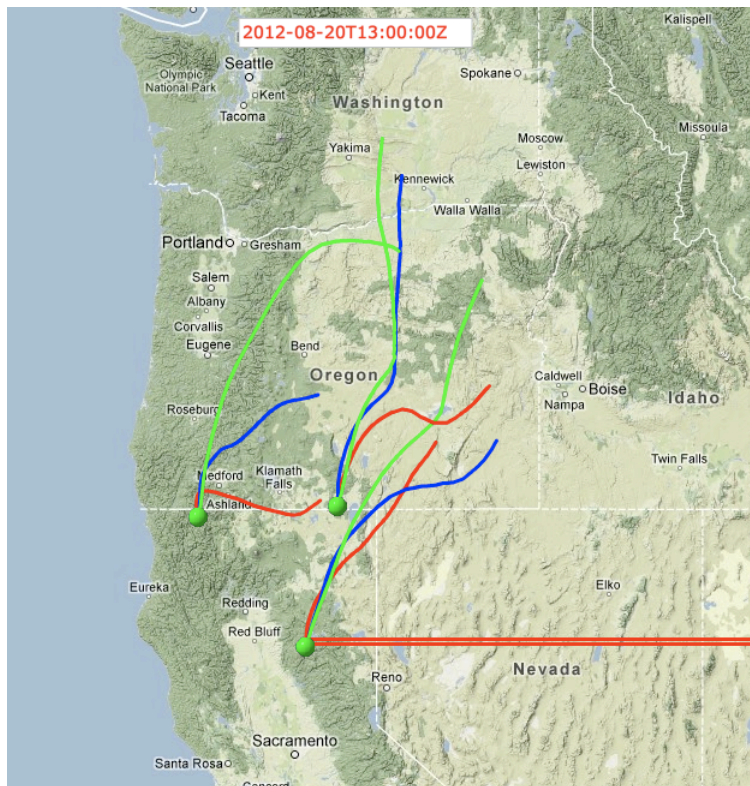
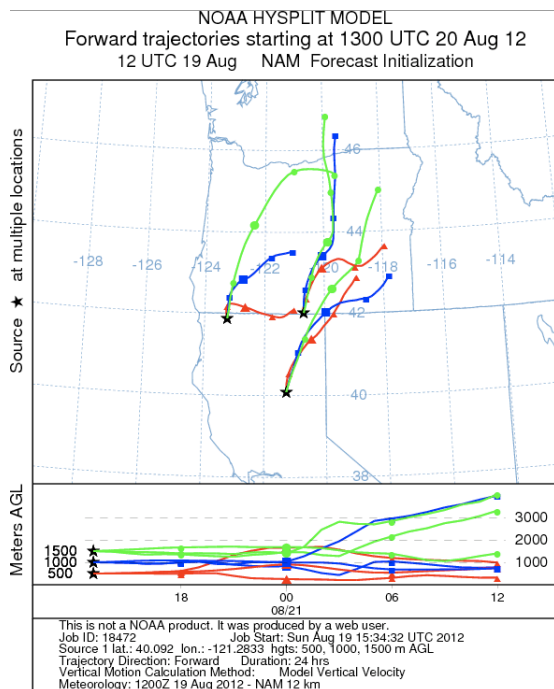


Figure 8. 24-hour forward trajectories for the Chips, Barry Point, and Fort fires, starting at 6:00 AM PDT, Aug 20, with release heights of 500 (red) 1000 (blue) and 1500 (green) meters AGL.